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THE PREPARATION OF SLIDES FOR MEASUREMENT OF DUST PARTICLE SIZE [1]

By W. E. McCormick,[2] *Passed Assistant Chemist (R), United States Public Health Service*

The determination of the particle size of atmospheric dusts of unhygienic significance is frequently necessary in order to evaluate properly the health hazard arising from a given dusty operation or process. The prevailing method now in use for making this determination is to measure microscopically (by either a filar micrometer or a microprojector) a sufficient number of particles (usually 150 to 200) of the atmospheric dust, and then to determine graphically the geometric mean size and standard deviation (*1*, *2*, *3*).

At least three methods have been used frequently by industrial hygienists for obtaining the dust specimen for measurement. These are:

1. Deposition of the dust directly from the workroom atmosphere onto a microscope cover slip by the Owens jet dust counter (*1*, *4*).
2. Evaporation of a drop of the impinger dust sample solution on a microscope slide (*1*, *4*).
3. Preparation of a microscope slide by Green's method from a small portion of dry dust mixed with a vehicle such as turpentine (*5*).

For some dusts all of these methods are unsatisfactory and are open to criticism.

Bloomfield (*4*) and Bloomfield and Dalla Valle (*1*) found agreement existing between the first two methods, but favored the use of the first because of the greater simplicity both of collection of the dust and of final preparation of the specimens. The dusts used by them, however, for comparative purposes, were of the nonfibrous types, and possessed, for each individual sample, fairly uniform particle sizes. With dusts of the fibrous types, such as that found in asbestos textile

[1] From the Industrial Hygiene Division.

[2] On detail to the Division of Industrial Hygiene, North Carolina State Board of Health, Raleigh, N. C.

manufacturing plants, where both the fiber size and content may be of industrial health significance, it is questionable whether the Owens instrument obtains samples which are representative of the workroom atmosphere. The instrument has been used for studies of this type (*6*), but more data appear to be needed to determine its reliability with this type of dust. It is known that the instrument is selective for particles below 2 microns (*1*, p. 36). In a few preliminary comparative tests recently made by the author on slides prepared from asbestos dust both by the Owens dust counter and by the evaporation method, it has been observed that a considerably lower percentage of fibers existed on the Owens slides. The exact explanation for this is not known, although it might be due to the greater difficulty in wetting the larger asbestos fibers by the method used in this instrument (by moisture condensation on the dust due to the high velocity and the resulting cooling of the moisture-saturated air in passing through the slit), and thus decreasing their ability to adhere to the glass cover slip.

Slides prepared by the second method are not wholly satisfactory, when dealing with fibrous dusts, due to the tendency to agglomeration of the particles and fibers. This frequently renders the particles on the slide very difficult or impossible to measure.

Green's method utilizes dry dust collected either by the filter bag method of Hatch (*7*), or from rafters and ledges in the workroom atmosphere. Silverman and Franklin (*8*), however, have shown that this method of slide preparation tends to disintegrate the more fragile particles, and is not satisfactory for particle size measurements of industrial dust.

The author has used for some time a method of slide preparation which overcomes the above objections. Although no advantage for it is claimed over the first two methods for dusts of either the nonfibrous or nonagglomerating types, it is equally applicable to them. In brief, the method involves the settling of the suspended dust (from a liquid medium) onto the surface of a No. 1 microscope slide cover glass, allowing the suspending liquid to evaporate slowly to dryness, and then mounting the cover glass, dust side down, onto a microscope slide for later examination and measurement. The dust deposit, thus being on the underside of the cover glass, can be sharply focused and measured by oil immersion.

Either the Dunn dust-counting cell (*9*) or the modification of this cell recently described (*10*) is used as the settling chamber. The No. 1 cover glass (1-inch circle or square) is used as the base. The cell is filled with a small portion of the impinger sample, and covered with a 1- by 3-inch microscope slide. Evaporation of the liquid is allowed to proceed spontaneously. It has been found that just barely "cracking" the cell, by sliding the edge of the microscope

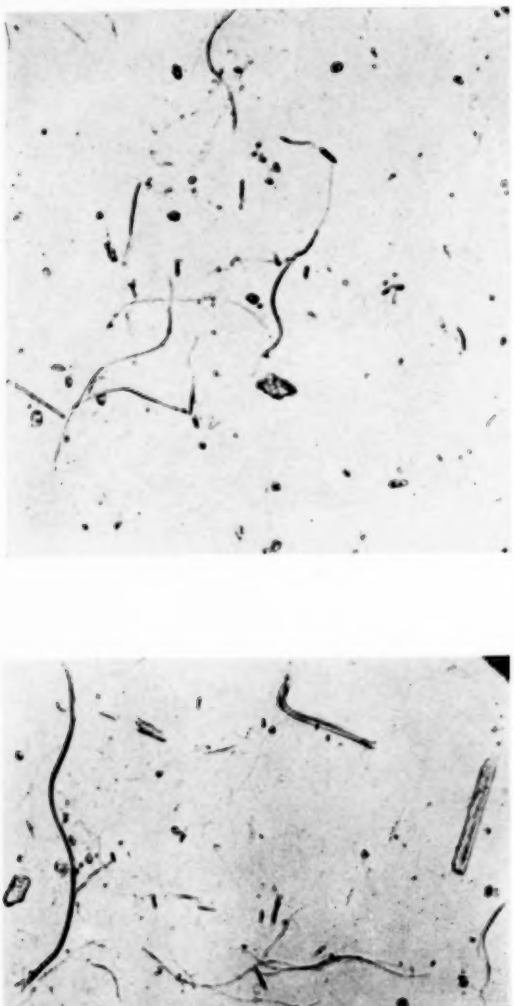

FIGURE 1.—Photomicrographs of asbestos dust made at 500× from slides for which the settling technique of dust deposition was used.

slide to the edge of the cell hole, will aid in the evaporation without permitting entrance of extraneous atmospheric dust. A practical means of accomplishing the settling and evaporation is to permit it to proceed overnight. The dust is thus evenly dispersed over a circular area of about 22 mm. in diameter on the floor of the cell (the No. 1 cover glass).

Upon complete evaporation of the liquid, the glass spacer of the cell is carefully removed and the downturned surface of the microscope slide placed on the upturned surface of the cover glass, so that the area of the slide which covered the cell hole is superimposed over the dust deposit. In this way extraneous contamination is avoided. The slide and cover both can then be inverted as a unit, and the cover firmly cemented to the slide with any of the common microscopic mounting materials for future examination and measurement. If it is desired to mount the dust specimen in a suitable liquid medium for either particle size or refractive index measurements, the cover glass can be cemented at only a few spots, and the medium can than be carefully flowed in between the cover and slide while in the mounted position.

It is very important in preparing the slides, in order to obtain even distribution of the dust without agglomeration, that all parts be clean. The following sequence of cleaning operations has been found to be satisfactory: Scrubbing with soap and water, rinsing with water, immersing in dichromate-sulfuric acid cleaning solution for 10 to 15 minutes, rinsing several times with tap water, and finally rinsing with 95 percent alcohol. The glass parts should be handled only with forceps after immersion in the cleaning solution, inasmuch as the perspiration and the oils from the skin will cause grease contamination and will interfere with uniform distribution of the dust particles.

Figure 1 shows photographs (500X) made of asbestos dust, collected by an impinger, with the slides made by the above method. The photographs illustrate the uniformity of distribution and discreteness of the particles and fibers.

Ethyl alcohol (95 percent) has been used as the collecting medium and the impinger as the method of collection in all of the slide preparations made by the author by this method. However, the method is equally applicable to samples collected by the electrostatic precipitator, or to dry dust samples, suspended in a suitable liquid.

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COMPOSITION OF SOME TRADE NAME SOLVENTS USED FOR CLEANING AND DEGREASING, AND FOR THINNING PAINTS [1]

By Allen D. Brandt, *Senior Sanitary Engineer, United States Public Health Service,* W. J. McConnell, *Colonel Medical Corps, Army of the United States,* and R. H. Flinn, *Senior Surgeon, United States Public Health Service.*

As a result of a series of acute cases of systemic poisoning, with one fatality, among workers using solvents at a shell- and bomb-loading plant, it was decided to make available to the explosives plants [2] useful information on the composition and relative toxicity of many of the trade name solvent products used in these establishments. By means of questionnaires to approximately 90 Government-owned explosives manufacturing, loading, and storing plants a roster was obtained of all solvents in current use. From this list approximately 200 representative products were selected for chemical analysis. Samples of the selected products were sent by the respective establishments to the Army Industrial Hygiene Laboratory or to the Industrial Hygiene Division of the United States Public Health Service for chemical analysis.[3] The results of these analyses were then compiled into a solvent index which contained all the pertinent data in a form which would permit their convenient use by the personnel of the plant, medical, safety, and engineering departments.

Since many of the products investigated are used also by many other industries it was deemed advisable to make the information available generally to everyone interested in industrial hygiene. It must be remembered, however, that the composition of the various products, as given in tables 1, 2, and 3, is the composition of the

[1] From the Industrial Hygiene Branch, Safety and Security Division, Ordnance Department, Army Service Forces.

[2] Plants assigned to the Safety and Security Division, Office of the Chief of Ordnance for production security inspection.

[3] The authors are indebted to Mr. A. N. Setterlind, of the Division of Industrial Hygiene, Illinois Department of Public Health, and to Mr. D. E. Rushing, of the Industrial Hygiene Division, U. S. Public Health Service, for their suggestions and assistance in the classification of the ingredients of these trade name products. Acknowledgment is made also of the large amount of work done by personnel of the Army Industrial Hygiene Laboratory and the Industrial Hygiene Division, U. S. Public Health Service, in analyzing the samples.

specific sample analyzed and may represent accurately only one lot of the product. Manufacturers of materials of this type frequently change the ingredients or the proportions thereof for various reasons. Consequently, there is no assurance that these products would be exactly the same if purchased today as they were during the second quarter of the present calendar year (1945) when the analyses were made. The only way to be certain of the composition of products of this nature is to analyze a sample from each lot number as received. On the other hand, the general make-up of many of the products listed in tables 1, 2, and 3 will remain remarkably similar since the ingredients are selected by the manufacturers primarily on a functional basis.

The substances analyzed have been classified alphabetically under the names submitted by the users in tables 1, 2, and 3. The names of the suppliers or manufacturers are also given. The supplier or manufacturer listed is the one given by the plant using the particular substance and many of the products listed are available from other sources. The first column contains an index number which serves to identify the material for convenient reference in table 4.

It should be emphasized that the supplier or manufacturer listed in the tables is the one given by the plant which submitted the sample. Most of these same products can be obtained from a large variety of other suppliers. To obtain a fairly complete list of the suppliers would have required a prohibitive amount of time. Consequently, only the one from which the material was actually purchased is listed, with the thought that other plants which desire to use any of these products can obtain the names of the nearby dealers by writing to the one listed in the table.

The samples analyzed were divided into three groups according to their composition and use. In table 1 are listed the substances which are used as cleaners and degreasers, and which are composed mainly of organic solvents. In table 2 are listed the substances which are used as thinners for paints, lacquers, and other finishing materials. The ingredients of these also are largely organic solvents. The miscellaneous materials which are used chiefly as cleaners, degreasers, and protective coatings, and which contain relatively little organic liquid are listed in table 3. Table 4 is a reference table which contains a list of the various substances used by different plants according to mode of use or type of operation at which employed.

The organic liquid components of the products listed in the first three tables are divided into four all-inclusive groups chemically, which are physiologically more or less distinct. They are as follows:

1. AROMATICS: These materials are very toxic. The common ones have maximum allowable concentrations of 50 to 200 p. p. m. Examples are benzene, toluene, and xylene.

2. HALOGENATED HYDROCARBONS: These chemicals also are very toxic. Most of those encountered in the group of samples analyzed have maximum allowable

TABLE 1.—*Organic solvents used for cleaning or degreasing operations*

Code No.	Name or trade name of product	Composition (percent)					Boiling range (° C.)	Supplier or manufacturer
		Aromatics (mac. 50–200 p. p. m.)	Halogenated hydrocarbons (mac. 50–200 p. p. m.)	Alcohols, esters, ethers, and ketones (mac. 200–400 p. p. m.)	Paraffins and naphthenes (mac. 500–1,000 p. p. m.)	Other		
C– 1	Actusol (grease solvent)				100		155–205	Warren Refining Co., Cleveland, Ohio.
C– 2	Amercoat #10	29		58	13		110–158	Gregg Co., Philadelphia, Pa.
C– 3	Amercoat #12	27		64	9		58–164	Do.
C– 4	APCO-140				100		180–220	Bertram Naphtha Co., Kansas City, Mo.
C– 5	Ber-to-sol	5	60		35		84–144	Do.
C– 6	Blankrola	9	45		46		128–175	Addressograph-Multigraph Corp., Cleveland Ohio.
C– 7	Casite Sludge Solvent	45			55		170–260	Graff Motor Co., Rapid City, S. D.
C– 8	CC Sol	10		17	73		80–146	Bertram Naphtha Co., Kansas City, Mo.
C– 9	Cellosolve Acetate			100			155–158	Carbide & Carbon Chemicals Corp., Detroit, Mich.
C–10	Cleaners Naphtha				100		155–220	
C–11	Cleaning Fluid				100		145–200	Quartermaster, Aberdeen Proving Ground, Aberdeen, Md.
C–12	Colonel Speedy Carbon and Rust Remover.			45		Water	70–100	Jersey City Quartermaster Depot, Jersey City, N. J.
C–13	Dearboline Cleaning Compound				100		185–300	Dearborn Chemical Co., Philadelphia, Pa.
C–14	Degreasal		100				70–110	General Electric Supply Co., Denver, Colo.
C–15	Degreasal Hi T				100		160–222	General Electric Supply Co., Evansville, Ind.
C–16	Ditto Fluid			100			78 app.	Ditto Inc., Chicago, Ill.
C–17	Dry Cleaners Solvent				100		156–196	
C–18	Dry Cleaning Fluid		25		75		75–140	Shell Oil Co., Baltimore, Md.
C–19	Dry Cleaning Solvent				100		160–205	Paris Oil Co., Paris, Tex.
C–20	Dry Cleaning Solvent (PS 661A)				100		145–210	Standard Oil Co. (Ohio), Cleveland, Ohio.
C–21	Finger Print Remover				100			
C–22	Gas-O-Clenz				100		80–150	Gulf Oil Corp., Augusta, Ga.
C–23	Hylite				100		55–175	Socony Vacuum Oil Co., New York, N. Y.
C–24	Imperial Washer Cleaner	20	70		10		75–120	Martindale Electric Co., Cleveland, Ohio.
C–25	Ink Cleaner #77			80	20		75–235	Superior Type Co., Chicago, Ill.
C–26	Keelite Z. C. Stripper	25		65	10		60–135	Keelite Products Inc., Houston, Tex.
C–27	Kerosene				100			
C–28	Kleen-O-Type	35	65				75–80	Gulf States Sales Co., Birmingham, Ala.
C–29	Lacquer Thinner #CT–350	16		47	37		78–134	E. I. duPont, Wilmington, Del.
C–30	Lithotine				100		150–210	Sinclair and Valentine, Baltimore, Md.
C–31	Loosite	30		8	62		60–270	Petroleum Solvents Corp,. New York, N. Y.
C–32	Magnolia Semical				100		160–200	Magnolia Petroleum Co., Amarillo, Tex.

C-31	Loosite	30		8	62		60–270	Petroleum Solvents Corp,. New York, N. Y.
C-32	Magnolia Sovalsol				100		160–200	Magnolia Petroleum Co., Amarillo, Tex.
C-33	Magnus Carbon Remover		55			Cresylic acid		
C-34	Magnusol				100		130–190	Magnus Chemical Co., Garwood, N. J.
C-35	Mineral Spirits				100		150–200	Standard Oil Co., Talladega, Ala.
C-36	Mineral Spirits #12				100		160–210	Anderson Prichard Oil Co., Newark, N. J.
C-37	Naphtha, Cleaners				100		155–220	
C-38	Naphtha, V M & P	11			89		112–141	Jamison Oil Co., Omaha, Nebr.
C-39	Nu-film #22	10		70	20		65–140	Cook Paint and Varnish Co., Omaha, Nebr.
C-40	O'Brien Lacquer Thinner L–156–XX	3		40	57			O'Brien Varnish Co., South Bend, Ind.
C-41	Paco Solvent (denatured alcohol)			100			75–100	Industrial Chemical Co., Omaha, Nebr.
C-42	Paint and Varnish Remover	50		50			64–75	V. J. Dolman and Co., Chicago, Ill.
C-43	Penotrite		20		80		139–186	General Solvents, Rochester, N. Y.
C-44	Ponsolve			100			73–79	E. I. duPont, Wilmington, Del.
C-45	Rifle Bore Cleaner				80	Water	76–260	S. C. Johnson & Son, Inc., Racine, Wis.
C-46	Shamrock Solvent				100		160–200	Shamrock Oil & Gas, Amarillo, Tex.
C-47	Shellacol			100			78 app.	Shell Oil Co., New York, N. Y.
C-48	Solvasol #5 (Varnoline)				100		160–190	Socony Vacuum Oil Co., New York, N. Y.
C-49	Solvental				94	Soap	185–245	Solvental Chemical Products Co., Pittsburgh, Pa.
C-50	Sovalsol, Magnolia				100		160–200	Magnolia Petroleum Co., Amarillo, Tex.
C-51	Stanisol Solvent Mixture				100		150–200	Standard Oil Co., New York, N. Y.
C-52	Stoddard Solvent				100		157–188	Phillips Petroleum Co., St. Louis, Mo.
C-53	Stoddard Solvent				100		150–200	W. J. Hough Co., Chicago, Ill.
C-54	Stoddard Solvent				100		145–195	Aetna Oil Co., Louisville, Ky.
C-55	Synosol			100			84 app.	Cook Paint & Varnish Co., Chicago, Ill.
C-56	Testors Thinner			60	40		60–110	Testor Chemical Co., Rockford, Ill.
C-57	Tomac Thinner				100		60–210	American Hospital Supply Co., Chicago, Ill.
C-58	Tri Sol		45		55		82–209	Bertram Naphtha Co., Kansas City, Mo.
C-59	Type Wash	39		38	23		64–142	Barco Chemical Products Co., Chicago, Ill.
C-60	Varnish and Paint Remover	50		50			64–75	V. J. Dolman & Co., Chicago, Ill.
C-61	Varsol				100		150–200	Standard Oil Co., New York, N. Y.
C-62	V M and P Naphtha	11			89		112–141	Jamison Oil Co., Omaha, Nebr.
C-63	Washurite		25	5	70		61–170	Davidson Mfg. Co., Chicago, Ill.

TABLE 2.—*Organic solvents used as thinners*

Code No.	Name or trade name of product	Composition (percent)			Boiling range (° C.)	Supplier or manufacturer
		Aromatics (mac. 50–200 p. p. m.)	Alcohols, esters, ethers, and ketones (mac. 200–400 p. p. m.)	Paraffins and naphthenes (mac. 500–1,000 p. p. m.)		
T- 1	Acme Paint Thinner	25	60	15	70–125	Pittsburgh Auto Equipment Co., Meadville, Pa.
T- 2	AMI Thinner			100	100–250	
T- 3	ANA Thinner (enamel)		100		82–128	Sewell Paint Co., Kansas City, Mo.
T- 4	Apco Thinner	14		86	122–147	Bertram Naphtha Co., Kansas City, Mo.
T- 5	Bitumastic Thinner			100	151–191	McJunkin Supply Co., Charleston, W. Va.
T- 6	Black Nitrocellulose Lacquer Enamel	10	50	40	70–140	Wabash Products Co., Terre Haute, Ind.
T- 7	Black Stencil Paint Thinner			100	158–195	Phelan Faust, St. Louis, Mo.
T- 8	Brit-Mark Stencil Ink Thinner		65	35	125–180	Diagraph Bradley Stencil Machine Corp., St. Louis, Mo.
T- 9	Butyl Cellosolve Thinner		100		171	Carbide and Carbon Chemical Corp., New York, N. Y.
T-10	Carbitol		100		198	Do.
T-11	Cellulose Nitrate Lacquer Thinner		60	40	70–125	Pittsburgh Plate Glass Co., South Bend, Ind.
T-12	Chocolate Brown Lacquer Thinner	5	50	45	65–120	Jones-Dabney, Louisville, Ky.
T-13	Chromated Lacquer Thinner (Reducer #66)	100				Grand Rapids Varnish Co., Grand Rapids, Mich.
T-14	Duco #3614		60	40	37–147	E. I. duPont Co., Wilmington, Del.
T-15	Duco Thinner (K–1486)	29	42	29	64–142	Arthur Fulmer, Memphis, Tenn.
T-16	DuPont #200 Paint Thinner	55		45	187–226	Koch's Paint & Supply Co., Burlington, Iowa.
T-17	DuPont #3322 Lacquer Thinner	30	50	20	75–139	E. I. duPont Co., Wilmington, Del.
T-18	DuPont Lacquer Thinner #3673		45	55	85–180	Do.
T-19	DuPont "Red" Thinner #3450		70	30	60–120	E. I. duPont Co., Dallas, Tex.
T-20	DuPont Synthetic Reducer (T–8879)			100	80–125	The W. E. Wright Co., Akron, Ohio.
T-21	DuPont Synthetic Reducer (T–8879)	25		75	136–204	E. I. duPont Co., St. Louis, Mo.
T-22	DuPont Thinner Mix		50	50		E. I. duPont Co., Wilmington, Del.
T-23	Enamel Thinner			100	90–120	Sewell Paint & Varnish Co., Dallas, Tex.
T-24	Ethyl Cellulose Lacquer Thinner	15	50	35	78–143	Sewell Paint & Varnish Co., Kansas City, Mo.
T-25	Gensol	Turpentine			145–175	Newport Industries, Cincinnati, Ohio.
T-26	Glyptal Thinner	73		27	126–143	General Electric Supply Co., Pittsburgh, Pa.
T-27	Hydro #1—Reducing—Spec. #2	75		25	100–145	Western Rosin & Turpentine Co., Detroit, Mich.
T-28	Hydro Flex #195 Paint Thinner	22		78	118–187	Phelen-Faust Paint Mfg. Co., St. Louis, Mo.
T-29	Ink Paste Thinner			100	165–201	Howard Flint Ink Co., Houston, Tex.
T-30	Ink Reducer	1		99	153–205	Howard Flint Ink Co., Detroit, Mich.
T-31	Ink Thinner #77		100		77–97	The Superior Type Co., Chicago, Ill.
		97		3	79–126	Westinghouse Electric Supply Co., Pittsburgh, Pa.

T-31	Ink Thinner #77		100		77–97	The Superior Type Co., Chicago, Ill.
T-32	Insulating Varnish Thinner #6052	97		3	79–126	Westinghouse Electric Supply Co., Pittsburgh, Pa.
T-33	Japan Dryer			100	150–210	
T-34	Lacquer Enamel Thinner	35	40	25	70–135	O'Brien Varnish Co., South Bend, Ind.
T-35	Lacquer Thinner	45	25	30		Do.
T-36	Lacquer Thinner	20	50	30		Cook Paint & Varnish Co., Houston, Tex.
T-37	Lacquer Thinner	11	51	38	69–134	Pittsburgh Plate Glass Co., St. Louis, Mo.
T-38	Lacquer Thinner	15	45	40	72–137	Gilman Paint & Varnish Co., Chattanooga, Tenn.
T-39	Lacquer Thinner 250–C–636	15	55	30	75–140	Cook Paint & Varnish Co., Houston, Tex.
T-40	Lacquer Thinner #1055A	2	72	26	78–120	Sewell Paint & Varnish Co., Kansas City, Mo.
T-41	Lacquer Thinner #1173B	20	52	28	79–141	P. D. George Co., St. Louis, Mo.
T-42	Lacquer Thinner (FL–19830)	15	60	25	80–139	Pittsburgh Plate Glass Co., St. Louis, Mo.
T-43	Lacquer Thinner (FL–20300)	5	60	35	72–135	Pittsburgh Plate Glass Co., Birmingham, Ala.
T-44	Lacquer Thinner (U. L. 10045)	15	60	25	70–140	O'Brien Varnish Co., South Bend, Ind.
T-45	Mineral Spirits			100	156–198	Standard Oil Co., Huntsville, Ala.
T-46	Naphtha	5		95	88–150	
T-47	Naphtha	10		90	96–143	Jamieson Oil Co., Omaha, Nebr.
T-48	Nitrocellulose Lacquer Thinner	45	35	20	75–140	F. J. Donahoe Varnish Co., Detroit, Mich.
T-49	Nitrocellulose Nitrate Dope Thinner	30	55	15	75–140	Grand Rapids Varnish Co., Grand Rapids, Mich.
T-50	N. R. C. Thinner	3	70	27	67–121	E. I. duPont Co., Wilmington, Del.
T-51	O'Brien Lacquer Thinner (L–165–3)	46	30	24		O'Brien Varnish Co., South Bend, Ind.
T-52	Paint #29232A Thinner			100	98–136	Pittsburgh Plate Glass Co., Cleveland, Ohio.
T-53	Pentol O. D. Enamel Thinner	20	10	70		Sewell Paint & Varnish Co., Kansas City, Mo.
T-54	Phenolic Thinner		100			Stoner & Nudge Co., Pittsburgh, Pa.
T-55	Pittsburgh Minimax		36	64		Pittsburgh Plate Glass Co., Pittsburgh, Pa.
T-56	Pyroxyline Thinner	4	55	41		S. C. Johnson & Son, Inc., Racine, Wis.
T-57	Red Lacquer Thinner	15	50	35	68–145	Pittsburgh Plate Glass Co., Memphis, Tenn.
T-58	Reducer #74			100	145–205	Sherwin-Williams Paint Co., Baltimore, Md.
T-59	Sea Lac Lacquer Thinner	30	40	30	65–130	Duralac Chemical Corporation, Newark, N. J.
T-60	Sewell #3551 Paint Thinner	75		25	134–175	Sewell Paint & Varnish Co., Kansas City, Mo.
T-61	Sherwin-Williams Paint Thinner	5		95	64–130	Sherwin-Williams Co., Dallas, Tex.
T-62	Sol Naphtha			100	160–194	Shell Petroleum Co., New York, N. Y.
T-63	Solox		100		77–107	McKesson-Robbins Co., Omaha, Nebr.
T-64	Solvesso #1 Thinner	60		40	85–135	Standard Oil Co., Norfolk, Va.
T-65	Solvesso #3	70		30	170–220	Colonial Beacon Oil Co., Springfield, Mass.
T-66	Solvesso—Sohio #1	70		30	90–140	Standard Oil Co., Akron, Ohio.
T-67	Special Fast Dry Stencil Thinner	18		82	111–141	Wm. H. Witte & Sons Paint Co., Burlington, Iowa.
T-68	Spruance Thinner	7	55	38	68–140	Gilbert Spruance Co., Philadelphia, Pa.
T-69	Stencil Thinner Solvent #50	25	65	10	50–195	Garvey Fountain Brush & Ink Co., St. Louis, Mo.
T-70	Superior #77 Ink Thinner		100		80–200	The Superior Type Co., Chicago, Ill.
T-71	Synthetic Enamel Thinner	40		60	135–200	
T-72	Synthetic Thinner for O. D. Paint			100	90–145	Rinshed Mason Co., Detroit, Mich.
T-73	Synthetic Thinner—Latex		60	40	70–165	Dyke Motor Supply Co., Akron, Ohio.
T-74	Thinner #30	60	40		56–125	Graybar Electric Co., Newark N. J.
T-75	Thinner #74			100	160–210	Sherwin-Williams Co., Des Moines, Iowa.

TABLE 2.—*Organic solvents used as thinners*—Continued

Code No.	Name or trade name of product	Composition (percent)			Boiling range (° C.)	Supplier or manufacturer
		Aromatics (mac. 50-200 p. p. m.)	Alcohols, esters, and ketones (mac. 200-400 p. p. m.)	Paraffins and naphthenes (mac. 500-1,000 p. p. m.)		
T-76	Thinner, Acid Proof Black Paint	15		85	120-147	Testor Chemical Co., Rockford, Ill.
T-77	Thinner, Cooks	20	50	30		Cook Paint & Varnish Co., Houston, Tex.
T-78	Thinner, G. E. #1500	70		30	105-145	Graybar Electric Co., Newark, N. J.
T-79	Thinner, Lacquer #20	22	52	26	69-153	Acme White Lead & Color Works, Detroit, Mich.
T-80	Thinner, Lacquer (du Pont) (3-162-1)	21	32	47		E. I. duPont, Co., Wilmington, Del.
T-81	Thinner, Lacquer Enamel (3-162-A)	20	50	30	70-130	Wabash Products Co., Terre Haute, Ind.
T-82	Thinner, Lacquer Enamel (Cooks)	34		66	67-141	Cook Paint & Varnish Co., Kansas City, Mo.
T-83	Thinner, Lacquer Enamel (Nitro Cellulose)		60	40		S. C. Johnson & Son, Inc., Racine, Wis.
T-84	Thinner, Marking Ink #4		100		124	Hilton Hawley Co., Cincinnati, Ohio.
T-85	Thinner—Paint (#76)	10	65	25		
T-86	Thinner, Pedigree #150	100			133-151	H. A. Holden, Inc., Minneapolis, Minn.
T-87	Thinner, Testor's	26	33	41		Testor Chemical Co., Rockford, Ill.
T-88	Thinner, Witte's Lacquer Thinner	26	30	44	82-124	Wm. H. Witte & Sons Paint Co., Burlington, Iowa.
T-89	V. M. & P. Naphtha	5		95	98-176	Socony Vacuum Co., St. Louis, Mo.
T-90	Warren's Deodorized Leptine			100	165-210	Warren Paint and Color Co., Nashville, Tenn.
T-91	Wash #5816 Thinner	10	75	15	70-140	George Rutledge Co., Montclair, N. J.
T-92	Westinghouse #6110 Thinner		100		73-107	Westinghouse Electric Supply Co., Pittsburgh, Pa.
T-93	Westinghouse Tufferneil Thinner 1609	3		97	155-196	Westinghouse Electric Supply Co., St. Paul, Minn.
T-94	Xylol Solvesso	100			135-180	Standard Oil Co., Akron, Ohio.
T-95	Zapon Cotite A	15	80	5	70-130	Zapon Division, Atlas Powder Co., Philadelphia, Pa.

concentrations in the range of 50 to 200 p. p. m. Examples are carbon tetrachloride, trichloroethylene, and dichlorobenzene.

3. ALCOHOLS, ESTERS, ETHERS, AND KETONES: These chemical groups are less toxic than 1 and 2. Most of those encountered in the samples analyzed fall into a maximum allowable concentration toxicity range of 200 to 400 p. p. m. Examples are acetone, methyl ethyl ketone, the alcohols, and the acetates.

4. PARAFFINS AND NAPHTHENES: This group is not particularly toxic. It includes materials such as gasoline, Stoddard solvent, petroleum naphtha, and V M and P naphtha. The maximum allowable concentrations for the materials in this group range from 500 to 1,000 p. p. m.

In addition to the substances described in paragraphs 1, 2, 3, and 4 above, some of the products listed in table 3 contain other ingredients. These are of little concern, as a rule, from the inhalation viewpoint but are of importance as regards skin contact. Free alkali and various acids may produce burns or dermatitis if brought in contact with the skin, and others may act as sensitizers and cause allergic eczema.

The results of the analyses were classified as described above because it was felt that this arrangement would be more useful to the majority of personnel than would the actual specific analyses. Hence, an estimate of the danger associated with using a given product may be obtained by noting what percentages of the ingredients fall in the more toxic groups, and observing the boiling range. It should be emphasized that for many operations the boiling range is important and high boiling products should be selected in preference to low boiling ones since, other things being equal, the natural evaporation rate decreases as the boiling point increases and the atmospheric concentration of the vapors of the ingredients will therefore be lower with the higher boiling products.

The data contained in tables 1, 2, and 3 make it possible for personnel of the medical and safety departments to estimate the degree of hazard associated with the use of any of the products investigated; and those in table 4 make it possible to select a less toxic substitute for the same operation.

Even though the data in this paper pertain largely to the health hazard associated with the use of these materials, it must be remembered that most solvents, thinners, and cleaners with the exception of the halogenated hydrocarbons also present important fire and explosion hazards. As a rule the proper control of the health hazard will automatically control the fire or explosion hazard but such is not always the case. It is necessary, therefore, that adequate precautions be taken to prevent the existence or creation of a fire hazard. The potential fire and explosion hazard is influenced greatly by the flash point and by the boiling point of the material used; hence these factors as well as the toxicity must be taken into consideration when selecting the best product for a given operation or use.

TABLE 3.—*Materials or products used for cleaning, degreasing, cementing, or finishing operations*

Code No.	Name or trade name of material	Composition [1]									Boiling range (° C.)	Supplier or manufacturer
		Aromatics (mac. 50–200 p. p. m.)	Halogenated hydrocarbons (mac. 50–200 p. p. m.)	Alcohols, esters, ethers, ketones (mac. 200–400 p. p. m.)	Paraffins and naphthenes (mac. 500–1,000 p. p. m.)	Free alkali	Alkaline salts	Detergents and soap	Water	Other		
M-1	Apex						36	7	x	Neutral salts		Apex Alkali Products Co., Philadelphia, Pa.
M-2	Bendix Cleaner		22	8	35					Cresylic acid	70–255	Chain Battery & Auto Supply Co., Shreveport, La.
M-3	Blufilm No. 30	5		60	35						35–94	Sherwin-Williams Paint Co., Baltimore, Md.
M-4	Brex						83	13	4			Rudolph Ramelli Co., Milan, Tenn.
M-5	Carbon Remover Solvent	Walter solution containing chromate and cresol										
M-6	Carbon Remover Solvent		55					15	5	Cresylic acid	98–226	San Antonio Arsenal, San Antonio, Tex.
M-7	Cassite (Penetrating Oil)									High boiling oil		Reichman Crosby & Co., Memphis, Tenn.
M-8	Cowles Cleaner (metal cleaner).					32	46	14		Neutral salts		Cowles Detergent Co., Cleveland, Ohio.
M-9	Dearborlene									High boiling oil	175–350	Dearborn Chemical Co., Chicago, Ill.
M-10	Deoxit	Water solution of acid salt										Multigraph Sales Co., Erie, Pa.
M-11	Ducsol Amerold				25			x	10	Cresylic acid		Third Service Command Shop, Reading, Pa.
M-12	Enn-Jay Naphtha (xylol)	90			10						130–145	Standard Oil Co. of New York.
M-13	Ferrocote #360				53				2	Residue		Quaker Chemical Products Co., Conshohocken, Pa.
M-14	Fuzee (motor cleaner & carbon remover).		40						5	Sulfonated oil	52–194	Turco Products Co., Atlanta, Ga.
M-15	Gunk				40			10	40	Cresols	90–205	Curran Corp., Malden, Mass.
M-16	Gunk—960A Concentrate		2					3	93	do		
M-17	Keelite AAF Star		35	25				x	30	Cresylic acid	60–210	Kelite Products Inc., Huston, Tex.
M-18	Keelite #24 Cleaner					19	73		8			Do.
M-19	Keelite 50 (motor cleaning compound).					14	46	15	25			Do.
M-20	Keelite (radiator cleaning compound).					13	10	10	65	Glycol		Do.
M-21	Keelite Superfoam							4	96		98–144	Do.
M-22	Keelite Texol Cleaner		10		45			35	10		70–245	Do.
M-23	Keepeze	Water solution of mucilage										Multigraph Sales Co., Birmingham, Ala.

M-23	Keepeze	Water solution of mucilage										Multigraph Sales Co., Birmingham, Ala.
M-24	Kendal Thin Film (AXS 673)				60					Residue		
M-25	Kermeed					15	62	7	16			Clayton Mfg. Co., Alhambra, Calif.
M-26	Ketrex (asphalt removing compound).		35		15				10	Cresylic acid	60-270	Kelite Products Inc., Houston, Tex.
M-27	Nufilm No. 22			70	30						51-125	Sherwin-Williams Paint Co., Baltimore, Md.
M-28	Penetone							x	x	Residue, 25		The Penetone Co., Tenefly, N. J.
M-29	Penetone Senior							x	x	Residue, 30		Do.
M-30	Penetrol		20					x	35	Cresylic acid		Turco Products Co., Los Angeles, Calif.
M-31	Platex	Water solution of salts and glycerin						•				Multigraph Sales Co., Erie, Pa.
M-32	Prepikl #4580 Rust Remover			3					42	H_3PO_4-35; $ZnCl_2$-15		Neilson Chemical Co., Detroit, Mich.
M-33	Repelex	Water solution of salts and glycerin										Multigraph Sales Co., Erie, Pa.
M-34	Ridolene #23 Metal Cleaner				41	36			23			American Chemical Paint Co., Ambler, Pa.
M-35	Rust Preventive Compound	(Insoluble in water)										Allied Products Co., Chicago, Ill.
M-36	3-Zyglo Solution Solvent							x	x	Siliceous material		

[1] Numbers indicate percent of ingredient present, and x indicates presence of ingredient in undetermined amount.

TABLE 4.—*List of products by operation or use*

Operation or use	Solvents or cleaners used
Affixing stencils to silk screens	M-3, M-27.
Ammunition reconditioning	C-9, T-13, T-49, T-64.
Ammunition renovation	C-9, T-13, T-49, T-64.
Asphalt removal	M-22.
Carbon removal	C-7, C-12, C-31, C-33, M-2, M-5, M-6, M-14.
Cleaning automobiles	M-18, M-21.
Cleaning auto parts	C-11, C-35, M-5, M-6.
Cleaning bombs	C-42, C-60, C-62.
Cleaning brushes	C-29, T-71.
Cleaning carbon	C-7, C-12, C-31, C-33, M-2, M-5, M-6, M-14.
Cleaning carburetors	C-34, M-2.
Cleaning clocks	C-23.
Cleaning components	C-42, C-48, C-60, C-61, T-49.
Cleaning Davidson machine mats	C-63.
Cleaning Ditto machines	C-16.
Cleaning electric motors	C-16.
Cleaning equipment	C-4, C-15, C-27, T-45, T-55, M-16, M-34.
Cleaning gages	C-13, C-27, C-52, C-53.
Cleaning, general purpose	C-10, C-19, C-27, C-35, C-41, C-52, C-53, C-55, C-61, T-45, M-34.
Cleaning ignition points	C-35.
Cleaning instruments	C-23, C-34.
Cleaning lithograph plates	C-30.
Cleaning machine parts	C-4, C-27, C-35, C-46, C-51, C-52, C-53.
Cleaning mechanical equipment	C-4, C-15, C-27, M-16, M-34.
Cleaning motors	C-7, C-14, M-14, M-19.
Cleaning multilith machines, plates, and rolls.	C-6, M-10, M-31, M-33.
Cleaning office machines	C-52, C-53.
Cleaning ordnance materiel	C-3, C-11, M-1.
Cleaning paint brushes	C-29, C-40, C-42, C-60.
Cleaning paint fixtures	C-29, C-40, C-42, C-60, M-30.
Cleaning press rolls	C-42, C-60.
Cleaning primer assembly	C-52, C-53.
Cleaning production parts	C-29, C-43, M-28, M-29, M-36.
Cleaning radiators	M-20.
Cleaning, renovation	C-9, C-42, C-60, M-1, M-7, M-32.
Cleaning rifle bores	C-45.
Cleaning rubber printing rolls	C-6.
Cleaning rubber stamps	C-36.

Operation or use	Solvents or cleaners used
Multilith machines, operation	M-31.
Multilith machines, plates and rolls, cleaning.	C-6, M-10, M-31, M-33.
Operating multilith machines	M-31.
Paint remover	C-42, C-60, T-13.
Preserving multigraph plates	M-23.
Preserving ordnance material	C-11, M-1, M-9, M-13, M-24.
Preserving small arms	M-1, M-9, M-13, M-24, M-35.
Protecting against acid or corrosion	C-2.
Removing carbon	C-7, C-12, C-31, C-33, M-2, M-5, M-6, M-14.
Removing dry ink from press rolls	C-42, C-60, T-43.
Removing enamel	C-42, C-60, T-13, T-23.
Removing fingerprints	C-21.
Removing ink	C-16, C-25, C-42, C-60, T-43.
Removing lacquer	C-42, C-57, C-60, T-13.
Removing paint	C-42, C-60, T-13.
Removing rubber gaskets	M-12.
Removing rust	C-12, M-1, M-7, M-32.
Removing stencils	C-18.
Renovation	C-9, C-12, T-13, T-49, T-64, M-35.
Rifle bore cleaner	C-45.
Rumbling cartridges	C-5, C-8.
Rust-proofing ordnance materiel	M-9, M-13, M-24, M-35.
Rust remover	C-12, M-1, M-7, M-32.
Solvent and dryer	T-33.
Stencil paint and ink remover	C-25, C-59.
Thinner, acid proof black paint	T-66, T-76.
Thinner, acid resisting enamel	T-3, T-76.
Thinner, antipaint-bubbling	T-94.
Thinner, auto paint	T-1, T-73, T-74, T-79.
Thinner, bullet tipping lacquer	T-24, T-40.
Thinner, China-wood oil finish	T-65.
Thinner, completed rounds ink	T-70.
Thinner, completed rounds lacquer enamel.	T-23, T-34.
Thinner, completed rounds paint	T-11.
Thinner, components cements	T-10.
Thinner, components paints	T-10, T-57.
Thinner, core lacquer	T-43.
Thinner, "duPont Red"	T-40.

Cleaning rifle bores	C-45.
Cleaning rubber printing rolls	C-6.
Cleaning rubber stamps	C-36.
Cleaning rust	C-12, M-1, M-7, M-32.
Cleaning scales	C-23.
Cleaning shells	C-42, C-60, C-62.
Cleaning silk screens	C-18, C-39.
Cleaning spray booths	C-40, M-30.
Cleaning stencil ink	C-25.
Cleaning stencil screens	C-18, C-39.
Cleaning stencil type	C-59.
Cleaning tetryl	C-26.
Cleaning tools	C-14, C-27, C-48, C-52, C-53, C-55, M-17.
Cleaning tracer machines	C-58.
Cleaning truck bodies	M-26.
Cleaning type	C-35, C-59.
Cleaning typewriters	C-24, C-28, M-15.
Cleaning vehicles	M-8, M-18.
Cleaning zinc plates	C-6.
Components renovation	C-48, C-61, T-10, T-11, T-13, T-49.
Degreasing clocks	C-23.
Degreasing floors	C-1.
Degreasing, general purposes	C-10, C-27, C-35, C-49, C-52, C-53, C-61, M-11, M-15.
Degreasing instruments	C-23.
Degreasing motors	C-14.
Degreasing parts	C-27, M-4, M-28, M-29, M-34, M-36.
Degreasing scales	C-23.
Degreasing tools	C-14, C-27, C-48, M-34.
Degreasing watch parts	C-22.
Ditto machine operation	C-16.
Dry cleaning	C-17, C-19, C-20, C-32, C-50.
Dryer and solvent	T-33.
Enamel remover	C-42, C-60, T-13, T-23.
Experimental purposes	T-14.
Finger print remover	C-21.
Finishing ordnance material	C-3, C-11, M-1, M-9, M-13, M-24.
Grease removal	C-1, M-18.
Ink remover	C-16, C-25, C-42, C-60, T-43.
Lacquer remover	C-42, C-57, C-60, T-13.
Metal sealing	M-12.
Thinner, components paints	T-10, T-57.
Thinner, core lacquer	T-43.
Thinner, "duPont Red"	T-19.
Thinner, electric motor paint	T-26, T-92, T-93.
Thinner, enamel	T-6, T-34, T-51, T-53, T-71, T-82, T-83, T-89.
Thinner, fins and shells paint	T-6, T-39, T-52, T-72, T-80, T-88, T-89.
Thinner, fuze paint	T-11, T-57.
Thinner, hot surfaces paint	T-5, T-53, T-82, T-83.
Thinner, ink	T-2, T-8, T-10, T-43, T-69, T-70, T-84.
Thinner, insulation varnish	T-26, T-32, T-59.
Thinner, interior enamel	T-51.
Thinner, lacquer	T-12, T-17, T-18, T-35, T-36, T-37, T-38, T-40, T-41, T-43, T-44, T-48, T-50, T-54, T-68, T-71, T-74, T-77, T-78, T-79, T-80, T-87, T-95.
Thinner, load line enamel	T-23, T-34, T-82, T-83, T-87.
Thinner, maintenance paint	T-20, T-21, T-60, T-73, T-90.
Thinner, marking inks	T-2, T-8, T-9, T-30, T-69, T-84.
Thinner, metal sealing compound	T-19.
Thinner, motor insulating paint	T-26, T-32, T-59, T-86, T-92, T-93.
Thinner, motor winding paint	T-26, T-32, T-86, T-92, T-93.
Thinner, Navy tracer paint	T-56.
Thinner, nitrocellulose lacquer	T-6, T-48, T-83.
Thinner, N. R. C. lacquer	T-37, T-50.
Thinner, O. D. shell and bomb paint	T-88, T-89.
Thinner, paint	C-52, C-53, T-4, T-6, T-10, T-12, T-15, T-16, T-25, T-27, T-28, T-39, T-40, T-45, T-46, T-47, T-52, T-72, T-76, T-80, T-88, T-89.
Thinner, Pittman cement	T-63.
Thinner, silk screen	T-91.
Thinner, silk screen reproduction paint.	T-58, T-91.
Thinner, small arms repack paint	T-12.
Thinner, stencil ink	T-2, T-8, T-9, T-29, T-30, T-31, T-69, T-84.
Thinner, stencil paint	T-7, T-29, T-30, T-31, T-67.
Thinner, synthetic lacquer	T-55.
Thinner, wooden box paint	T-75.
Varnish remover	C-42, C-60.
Washing automobiles	M-21.

TUBERCULOSIS MORTALITY IN EACH STATE, 1944

The Bureau of the Census, on February 1, 1946, released the figures showing the number of deaths from tuberculosis (all forms) in each State and the death rates for 1944. In the table below are shown the number

Number of deaths from tuberculosis (all forms), death rates, and percent changes in rates, by State: United States, 1939–41 average, 1942, 1943, and 1944

[By place of residence]

Area	Number of deaths				Rate per 100,000 population				Percent change in rates		
	1944	1943	1942	1939–41 average	1944	1943	1942	1939–41 average	1943 to 1944	1939–41 to 1944	1939–41 to 1942–44
United States	54,731	57,005	57,690	60,429	41.3	42.6	43.1	45.8	−3.1	−9.8	−7.6
Alabama	1,269	1,302	1,285	1,518	45.0	45.0	43.7	53.4	0	−15.7	−16.5
Arizona	784	690	675	724	122.9	98.2	122.7	144.3	+25.2	−14.8	−21.3
Arkansas	826	939	1,029	1,009	46.5	50.2	52.0	51.7	−7.4	−10.1	−3.9
California	3,826	3,872	3,876	3,838	43.7	45.7	50.5	55.1	−4.4	−20.7	−15.6
Colorado	419	471	495	503	36.5	40.5	44.6	44.7	−9.9	−18.3	−9.4
Connecticut	661	621	633	616	37.2	34.9	35.5	35.9	+6.6	+3.6	0
Delaware	123	111	146	152	43.3	39.5	52.3	56.9	+9.6	−23.9	−20.9
District of Columbia	547	533	551	548	58.6	59.9	63.7	80.0	−2.2	−26.8	−24.1
Florida	823	855	870	944	34.7	36.1	40.7	49.4	−3.9	−29.8	−24.9
Georgia	1,141	1,332	1,295	1,510	35.4	41.3	40.2	48.2	−14.3	−26.6	−19.1
Idaho	109	93	86	99	20.4	18.7	18.0	18.8	+9.1	+8.5	+1.6
Illinois	3,218	3,349	3,338	3,663	41.6	43.5	41.6	46.3	−4.4	−10.2	−8.6
Indiana	1,221	1,248	1,281	1,398	35.7	36.7	36.7	40.7	−2.7	−12.3	−10.6
Iowa	341	395	427	450	15.0	17.0	17.6	17.7	−11.8	−15.3	−6.2
Kansas	357	345	438	423	20.1	19.4	25.0	23.6	+3.6	−14.8	−8.9
Kentucky	1,726	1,785	1,841	1,961	65.7	65.3	66.0	68.7	+.6	−4.4	−4.5
Louisiana	1,158	1,290	1,211	1,347	45.7	50.5	47.5	56.8	−9.5	−19.5	−15.7
Maine	279	275	258	268	35.2	33.6	31.2	31.7	+4.8	+11.0	+5.0
Maryland	1,326	1,277	1,311	1,268	62.3	61.0	65.7	69.4	+2.1	−10.2	−9.2
Massachusetts	1,698	1,819	1,630	1,623	40.8	42.7	37.5	37.6	−4.4	+8.5	+7.2
Michigan	1,814	1,869	1,891	1,828	33.4	34.5	34.2	34.7	−3.2	−3.7	−2.0
Minnesota	693	719	693	758	27.6	27.9	26.0	27.1	−1.1	+1.8	+.4
Mississippi	831	912	1,113	1,074	38.2	40.9	50.0	49.0	−6.6	−22.0	−12.2
Missouri	1,487	1,659	1,574	1,783	41.4	44.2	41.4	47.1	−6.3	−12.1	−10.0
Montana	175	206	201	235	37.6	42.5	39.0	42.0	−11.5	−10.5	−5.5
Nebraska	211	208	180	225	17.4	16.9	14.5	17.1	+3.0	+1.8	−4.7
Nevada	76	89	80	70	48.6	62.1	58.9	63.7	−21.7	−23.7	−11.8
New Hampshire	105	136	102	133	23.0	29.5	21.1	27.0	−22.0	−14.8	−9.3
New Jersey	1,856	1,932	1,882	1,852	44.5	45.6	44.0	44.4	−2.4	+.2	+.7
New Mexico	345	353	303	357	64.9	66.1	57.3	66.8	−1.8	−2.8	−6.1
New York	6,055	6,335	6,073	6,244	47.9	49.3	46.8	46.3	−2.8	+3.5	+3.7
North Carolina	1,239	1,366	1,461	1,598	35.1	37.5	41.0	44.6	−6.4	−21.3	−15.0
North Dakota	86	123	121	127	16.3	22.7	20.7	19.8	−28.2	−17.7	+.5
Ohio	2,787	2,793	2,846	2,913	40.8	40.6	41.0	42.1	+.5	−3.1	−3.1
Oklahoma	880	932	982	1,104	42.6	43.0	44.4	47.3	−.9	−9.9	−8.5
Oregon	307	271	299	307	25.3	21.9	27.3	28.1	+15.5	−10.0	−12.1
Pennsylvania	4,020	4,080	4,187	4,231	43.5	43.1	43.0	42.7	+.9	+1.9	+1.2
Rhode Island	300	296	280	265	38.4	39.4	37.8	37.1	−2.5	+3.5	+4.0
South Carolina	660	689	805	876	34.4	35.3	39.9	45.9	−2.5	−25.1	−2.6
South Dakota	178	170	185	197	31.9	30.5	31.6	30.7	+4.6	+3.9	+2.0
Tennessee	1,881	1,980	2,082	2,298	65.6	66.9	70.8	78.6	−1.9	−16.5	−13.7
Texas	3,126	3,338	3,611	3,814	45.4	47.9	53.9	59.4	−5.2	−23.6	−17.5
Utah	73	71	82	86	12.0	11.2	14.2	15.5	+7.1	−22.6	−20.0
Vermont	124	119	112	144	39.9	36.3	32.8	40.1	+9.9	−.5	−9.7
Virginia	1,344	1,449	1,632	1,628	42.0	47.1	54.0	60.5	−10.8	−30.6	−21.3
Washington	702	720	676	689	34.1	35.4	35.8	39.6	−3.7	−13.9	−11.4
West Virginia	764	769	765	880	44.6	43.8	41.6	46.1	+1.8	−3.3	−6.1
Wisconsin	726	776	759	806	24.4	25.8	24.3	25.6	−5.4	−4.7	−3.1
Wyoming	34	37	37	45	13.2	14.5	14.7	18.0	−9.0	−26.7	−21.1

of deaths and the death rates for each of the three war years, 1942, 1943, and 1944, and the average rate for the prewar period, 1939–41. In addition, the percentage changes in the rates from 1943 to 1944 and from 1939–41 to 1944, as well as the changes in the average rates from 1939–41 to the average rate for the period 1942–44 are shown.

A detailed report and analysis of all the mortality data for 1944 will be presented in a joint publication by the Division of Vital Statistics, United States Bureau of the Census, and the Tuberculosis Control Division, United States Public Health Service, in the April 5 issue of Public Health Reports.

DEATHS DURING WEEK ENDED JANUARY 5, 1946

[From the Weekly Mortality Index, issued by the Bureau of the Census, Department of Commerce]

	Week ended Jan. 5, 1946	Corresponding week, 1945
Data for 93 large cities of the United States:		
Total deaths	11,928	9,786
Average for 3 prior years	11,353	
Deaths under 1 year of age	644	592
Average for 3 prior years	701	
Data from industrial insurance companies:		
Policies in force	67,179,698	66,913,713
Number of death claims	10,576	10,427
Death claims per 1,000 policies in force, annual rate	8.2	8.1

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

REPORTS FROM STATES FOR WEEK ENDED JANUARY 12, 1946

Summary

The incidence of influenza declined in all of the 9 geographic divisions except the Mountain and the Pacific, in which areas totals respectively of 4,028 and 871 cases were reported. A total of 32,635 cases was reported for the country as a whole as compared with 48,041 last week, 4,132 and 65,649, respectively, for the corresponding weeks of 1945 and 1944, and a 5-year (1941–45) median of 4,330. Of 17 States reporting 200 or more cases for the week, only 5, with an aggregate of 5,217 cases, reported increases. These are as follows (last week's figures in parentheses): Arkansas 1,249 (1,204), Idaho 823 (79), Colorado 209 (195), Utah 2,284 (1,114), California 652 (436). The total for the first 2 weeks of the year is 80,676, as compared with 8,719 and 192,355 for the first 2 weeks of 1945 and 1944, respectively, and a 5-year median of 8,719.

A total of 262 cases of meningitis was reported, as compared with 189 last week, 645 for the corresponding week of 1944, and a 5-year median of 251 (reported for the corresponding week last year). States reporting more than 10 cases each are as follows (last week's figures in parentheses): New York 28 (14), New Jersey 11 (15), Pennsylvania 16 (7), Ohio 15 (10), Illinois 27 (9), Mississippi 13 (1), Texas 14 (13), California 23 (21). The total for the year to date is 451, as compared with 489 and 1,225, respectively, for the same periods of 1945 and 1944.

One case of dengue fever was reported for the week in Oregon.

A total of 11,668 deaths was recorded during the week in 93 large cities of the United States, as compared with 11,928 last week, 9,912 for the corresponding week of 1945 and a 3-year (1944–45) average of 10,642. The total for the first 2 weeks of the year is 23,596, as compared with 19,698 for the corresponding period last year.

Telegraphic morbidity reports from State health officers for the week ended January 12, 1946, and comparison with corresponding week of 1945 and 5-year median

In these tables a zero indicates a definite report, while leaders imply that, although none was reported cases may have occurred.

Division and State	Diphtheria			Influenza			Measles			Meningitis, meningococcus		
	Week ended—		Median 1941–45	Week ended—		Median 1941–45	Week ended—		Median 1941–45	Week ended—		Median 1941–45
	Jan. 12, 1946	Jan. 13, 1945		Jan. 12, 1946	Jan. 13, 1945		Jan. 12, 1946	Jan. 13, 1945		Jan. 12, 1946	Jan. 13, 1945	
NEW ENGLAND												
Maine	4	4	0	11	------	1	3	4	70	1	0	2
New Hampshire	0	0	0	1	------	------	12	1	3	0	0	0
Vermont	0	0	0	83	------	------	4	8	14	0	1	0
Massachusetts	4	6	2	------	------	------	262	71	358	6	8	8
Rhode Island	0	0	2	9	76	13	1	7	9	0	0	0
Connecticut	14	1	0	83	2	4	17	61	61	4	4	4
MIDDLE ATLANTIC												
New York	16	7	16	[1] 44	[1] 1	[1] 22	855	52	852	28	25	23
New Jersey	8	3	3	69	12	26	53	18	331	11	16	8
Pennsylvania	26	16	14	15	5	2	399	47	1,463	16	20	16
EAST NORTH CENTRAL												
Ohio	31	8	8	34	9	35	41	25	84	15	14	2
Indiana	11	7	14	113	9	26	46	7	63	2	5	2
Illinois	6	4	7	29	2	21	485	37	176	27	9	4
Michigan [2]	6	15	7	17	------	5	383	19	135	10	9	3
Wisconsin	0	3	1	524	9	61	69	33	437	7	4	2
WEST NORTH CENTRAL												
Minnesota	6	8	4	3	------	2	6	5	14	3	2	0
Iowa	1	6	10	------	------	------	3	16	100	1	2	0
Missouri	6	5	5	39	6	10	210	7	43	6	5	5
North Dakota	1	18	2	68	------	46	------	5	11	0	1	1
South Dakota	4	0	2	164	------	------	19	2	9	2	3	1
Nebraska	6	11	1	39	31	28	20	21	11	0	1	1
Kansas	4	4	4	253	2	16	146	19	68	1	4	4
SOUTH ATLANTIC												
Delaware	0	0	0	------	------	------	1	17	13	0	1	0
Maryland [2]	25	2	6	30	4	22	22	9	12	4	7	10
District of Columbia	0	0	1	2	1	4	8	11	11	0	3	1
Virginia	14	7	10	3,975	404	489	159	6	141	10	7	7
West Virginia	6	1	7	577	9	14	15	17	17	8	1	1
North Carolina	24	17	16	------	------	17	36	23	94	10	3	3
South Carolina	6	7	5	2,218	616	854	107	11	70	0	3	3
Georgia	9	10	9	253	50	157	9	21	26	2	1	1
Florida	18	13	4	4	4	14	32	17	17	0	10	1
EAST SOUTH CENTRAL												
Kentucky	4	4	8	178	47	47	181	9	152	6	3	3
Tennessee	14	9	5	583	52	92	68	88	88	6	4	4
Alabama	5	15	8	1,768	109	281	15	19	27	7	8	4
Mississippi [2]	18	12	9	------	------	------	------	------	------	13	5	2
WEST SOUTH CENTRAL												
Arkansas	11	9	9	1,249	107	212	18	17	51	3	3	1
Louisiana	9	9	5	5,221	6	9	22	18	20	3	5	3
Oklahoma	12	10	8	917	189	189	19	7	14	2	2	2
Texas	51	52	35	9,163	2,078	2,078	175	87	178	14	17	7
MOUNTAIN												
Montana	0	6	1	143	19	19	8	5	26	1	1	0
Idaho	1	3	0	823	1	2	227	5	10	3	1	0
Wyoming	0	0	0	------	28	36	20	1	8	0	2	1
Colorado	13	7	7	209	27	68	83	7	108	1	2	2
New Mexico	1	2	2	3	------	4	6	2	2	1	1	1
Arizona	3	1	1	565	166	166	5	7	39	1	1	2
Utah [2]	0	0	0	2,284	4	12	61	21	21	1	1	1
Nevada	0	0	0	1	------	------	15	5	3	0	0	0
PACIFIC												
Washington	2	4	4	------	------	5	245	32	50	2	9	9
Oregon	7	11	1	219	14	28	41	58	65	1	2	2
California	28	41	29	652	33	160	682	470	258	23	15	15
Total	435	378	330	32,635	4,132	4,330	5,314	1,455	8,266	262	251	251
2 weeks	893	739	702	80,676	8,719	8,719	8,083	2,434	16,407	451	489	489

[1] New York City only.
[2] Period ended earlier than Saturday.

Telegraphic morbidity reports from State health officers for the week ended January 12, 1946, and comparison with corresponding week of 1945 and 5-year median—Con.

Division and State	Poliomyelitis			Scarlet fever			Smallpox			Typhoid and paratyphoid fever [2]		
	Week ended—		Median 1941–45	Week ended—		Median 1941–45	Week ended—		Median 1941–45	Week ended—		Median 1941–44
	Jan. 12, 1946	Jan. 13, 1945		Jan. 12, 1946	Jan. 13, 1945		Jan. 12, 1946	Jan. 13, 1945		Jan. 12, 1946	Jan. 13, 1945	
NEW ENGLAND												
Maine	0	0	0	32	66	21	0	0	0	0	3	1
New Hampshire	0	0	0	13	5	9	0	0	0	0	0	0
Vermont	0	0	0	14	2	3	0	0	0	0	0	0
Massachusetts	0	1	1	183	403	299	0	0	0	0	1	1
Rhode Island	0	0	0	14	27	12	0	0	0	0	0	0
Connecticut	0	1	0	33	82	57	0	0	0	0	0	0
MIDDLE ATLANTIC												
New York	7	9	4	352	551	399	0	0	0	0	3	3
New Jersey	0	0	0	68	154	106	0	0	0	1	1	1
Pennsylvania	5	0	0	191	301	272	0	0	0	3	1	2
EAST NORTH CENTRAL												
Ohio	3	1	1	198	265	265	0	0	0	1	1	2
Indiana	0	1	1	73	120	101	0	1	1	1	0	2
Illinois	2	0	1	124	350	257	0	0	0	4	0	1
Michigan [1]	3	1	1	118	268	173	0	0	0	0	2	0
Wisconsin	0	0	0	91	141	141	0	0	0	0	0	0
WEST NORTH CENTRAL												
Minnesota	0	1	1	63	56	77	0	0	0	0	1	1
Iowa	3	0	0	30	81	63	0	0	1	0	0	1
Missouri	0	0	1	56	101	92	0	0	1	2	0	1
North Dakota	0	2	0	12	23	15	0	0	0	0	0	0
South Dakota	0	0	0	10	32	32	0	1	0	0	0	0
Nebraska	0	0	0	28	148	38	0	0	0	0	0	0
Kansas	0	0	0	64	143	92	2	1	1	0	0	0
SOUTH ATLANTIC												
Delaware	0	0	0	6	7	7	0	0	0	0	0	0
Maryland [1]	0	2	0	62	151	66	0	0	0	1	0	1
District of Columbia	0	0	0	14	46	25	0	0	0	0	0	0
Virginia	0	0	0	66	90	53	0	0	0	3	1	1
West Virginia	0	0	0	57	60	53	0	0	0	0	0	1
North Carolina	2	0	0	52	80	54	0	0	0	1	3	2
South Carolina	0	0	0	16	12	12	0	0	1	1	2	1
Georgia	0	0	1	13	29	24	0	0	0	2	4	4
Florida	3	1	0	8	14	7	0	0	0	1	2	2
EAST SOUTH CENTRAL												
Kentucky	0	0	0	43	36	70	0	0	0	1	0	1
Tennessee	1	1	1	42	83	58	0	1	0	2	1	1
Alabama	0	1	1	15	28	26	2	1	1	0	0	0
Mississippi [1]	0	1	0	17	37	10	0	0	0	1	2	1
WEST SOUTH CENTRAL												
Arkansas	2	0	1	8	16	10	0	0	0	0	0	2
Louisiana	0	0	0	10	21	8	0	0	0	4	4	4
Oklahoma	1	0	0	40	30	30	1	2	1	1	0	1
Texas	1	1	1	104	152	59	0	0	0	5	7	4
MOUNTAIN												
Montana	1	0	0	21	21	21	0	0	0	0	0	0
Idaho	0	0	0	13	57	25	0	1	0	0	1	0
Wyoming	1	0	0	9	12	10	0	0	0	0	0	0
Colorado	0	1	1	31	76	38	0	0	0	0	1	1
New Mexico	0	2	0	13	51	7	0	1	0	0	2	0
Arizona	1	1	0	11	25	9	0	0	0	1	3	2
Utah [1]	4	0	0	39	67	67	0	0	0	0	0	0
Nevada	0	0	0	0	3	0	0	0	0	0	0	0
PACIFIC												
Washington	1	1	1	27	82	38	0	0	0	0	1	1
Oregon	0	1	1	23	49	22	0	0	0	0	1	1
California	13	2	2	195	335	192	0	0	0	5	1	3
Total	54	32	32	2,722	4,989	3,637	5	9	16	41	49	59
2 weeks	101	84	73	5,105	8,911	7,094	9	21	24	81	81	117

[1] Period ended earlier than Saturday.
[2] Including paratyphoid fever reported separately as follows: North Carolina 1; California 2.

Telegraphic morbidity reports from State health officers for the week ended January 12, 1946, and comparison with corresponding week of 1945 and 5-year median—Con.

Division and State	Whooping cough			Week ended Jan. 12, 1946							
	Week ended—		Median 1941–45	Dysentery			Encephalitis, infectious	Rocky Mt. spotted fever	Tularemia	Typhus fever, endemic	Undulant fever
	Jan. 12, 1946	Nov. 25, 1945		Amebic	Bacillary	Unspecified					
NEW ENGLAND											
Maine	43	34	34	-----	-----	-----	-----	-----	-----	-----	-----
New Hampshire	10	5	3	-----	-----	-----	-----	-----	-----	-----	-----
Vermont	34	48	32	-----	-----	-----	-----	-----	-----	-----	2
Massachusetts	119	189	202	-----	-----	-----	1	-----	-----	-----	-----
Rhode Island	71	18	18	-----	-----	-----	-----	-----	-----	-----	-----
Connecticut	83	101	101	-----	2	-----	-----	-----	-----	-----	1
MIDDLE ATLANTIC											
New York	346	232	473	-----	2	-----	1	-----	-----	-----	9
New Jersey	183	92	164	-----	-----	4	-----	-----	-----	-----	1
Pennsylvania	157	173	310	-----	-----	-----	-----	-----	-----	-----	1
EAST NORTH CENTRAL											
Ohio	64	92	221	1	-----	-----	-----	-----	2	-----	-----
Indiana	19	7	23	3	-----	-----	-----	-----	1	-----	1
Illinois	59	77	121	3	-----	-----	-----	-----	3	-----	5
Michigan [3]	98	122	181	1	5	-----	-----	-----	-----	-----	1
Wisconsin	56	74	91	-----	-----	-----	-----	-----	-----	-----	1
WEST NORTH CENTRAL											
Minnesota	12	32	56	2	1	-----	-----	-----	-----	-----	2
Iowa	5	7	22	-----	-----	-----	-----	-----	-----	-----	6
Missouri	7	11	22	-----	-----	-----	-----	-----	-----	-----	-----
North Dakota	-----	4	13	-----	-----	-----	-----	-----	-----	-----	3
South Dakota	2	6	2	-----	-----	-----	-----	-----	-----	-----	-----
Nebraska	-----	12	3	-----	-----	-----	-----	-----	-----	-----	1
Kansas	34	48	48	-----	-----	-----	-----	-----	-----	-----	-----
SOUTH ATLANTIC											
Delaware	-----	3	3	-----	-----	-----	-----	-----	-----	-----	-----
Maryland [3]	27	77	84	-----	-----	4	-----	-----	5	-----	-----
District of Columbia	9	6	10	-----	-----	-----	-----	-----	-----	-----	-----
Virginia	36	39	48	-----	-----	25	-----	-----	3	-----	1
West Virginia	21	25	31	-----	-----	-----	-----	-----	-----	-----	-----
North Carolina	79	77	85	-----	-----	-----	-----	-----	2	2	-----
South Carolina	93	52	64	2	11	-----	-----	-----	-----	3	-----
Georgia	20	7	10	2	-----	-----	-----	-----	3	15	5
Florida	8	25	21	-----	-----	-----	1	-----	-----	8	-----
EAST SOUTH CENTRAL											
Kentucky	38	12	55	-----	-----	-----	1	-----	3	-----	-----
Tennessee	9	29	32	-----	-----	-----	-----	-----	2	-----	-----
Alabama	58	22	22	-----	-----	-----	-----	-----	-----	13	1
Mississippi [3]	-----	-----	-----	-----	-----	-----	-----	-----	1	3	1
WEST SOUTH CENTRAL											
Arkansas	3	7	17	2	-----	-----	-----	-----	4	2	1
Louisiana	-----	2	2	-----	-----	-----	-----	-----	3	7	-----
Oklahoma	4	11	8	1	-----	-----	-----	-----	-----	-----	-----
Texas	125	174	174	11	378	91	1	-----	-----	22	15
MOUNTAIN											
Montana	1	17	9	-----	-----	-----	-----	-----	-----	-----	-----
Idaho	21	-----	2	-----	-----	-----	-----	-----	-----	-----	1
Wyoming	-----	6	8	-----	-----	-----	-----	-----	-----	-----	-----
Colorado	27	35	28	-----	-----	-----	-----	-----	-----	-----	1
New Mexico	4	3	7	-----	-----	-----	-----	-----	-----	-----	1
Arizona	4	9	19	1	-----	38	2	-----	-----	-----	3
Utah [3]	3	5	24	-----	-----	-----	-----	-----	-----	-----	-----
Nevada	2	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
PACIFIC											
Washington	28	33	45	-----	-----	-----	-----	-----	-----	-----	1
Oregon	10	10	10	1	-----	-----	-----	-----	-----	-----	1
California	123	192	192	1	6	-----	1	-----	-----	-----	3
Total	2,155	2,263	3,864	31	405	162	8	0	32	75	69
Same week, 1945	2,263	-----	-----	38	618	160	8	0	43	84	69
Average, 1943–45	2,703	-----	-----	32	365	93	11	[4] 0	23	[4] 58	-----
2 weeks: 1946	3,528	-----	-----	68	855	263	13	0	52	142	116
1945	4,108	-----	-----	47	1,572	474	13	0	82	169	124
Average, 1943–45	5,047	-----	[4] 7,728	47	827	224	17	[4] 0	56	[4] 121	-----

[3] Period ended earlier than Saturday.
[4] 5-year median, 1941–45.

Anthrax: New Jersey 1. *Dengue:* Oregon 1.

WEEKLY REPORTS FROM CITIES

City reports for week ended January 5, 1946

This table lists the reports from 85 cities of more than 10,000 population distributed throughout the United States, and represents a cross section of the current urban incidence of the diseases included in the table.

	Diphtheria cases	Encephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Poliomyelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
NEW ENGLAND												
Maine:												
Portland	0	0	------	0	------	0	4	0	4	0	0	9
New Hampshire:												
Concord	0	0	------	0	------	0	3	0	1	0	0	------
Vermont:												
Barre	0	0	------	0	------	0	0	0	0	0	0	------
Massachusetts:												
Boston	1	0	------	0	13	0	17	0	29	0	0	31
Fall River	0	0	------	0	------	0	0	0	3	0	0	2
Springfield	0	0	------	0	1	0	1	0	9	0	0	1
Worcester	0	0	------	0	19	0	10	0	7	0	0	1
Rhode Island:												
Providence	0	0	2	1	------	0	2	0	4	0	0	18
Connecticut:												
Bridgeport	0	0	2	0	1	1	5	0	0	0	1	------
New Haven	0	0	7	1	2	0	4	0	0	0	0	1
MIDDLE ATLANTIC												
New York:												
Buffalo	3	0	12	1	------	0	5	0	3	0	0	32
New York	8	0	78	7	72	5	170	3	76	0	1	51
Rochester	0	0	------	0	2	0	7	0	15	0	1	3
Syracuse	0	0	------	0	296	0	3	0	7	0	0	7
New Jersey:												
Camden	2	0	------	1	------	0	1	0	1	0	0	4
Newark	0	0	15	4	4	2	7	0	8	0	0	30
Trenton	0	0	5	1	------	0	8	0	0	0	0	------
Pennsylvania:												
Philadelphia	2	0	23	5	140	3	37	0	32	0	0	30
Pittsburgh	1	0	3	4	------	1	14	1	11	0	0	4
Reading	0	0	1	3	------	0	4	0	1	0	0	8
EAST NORTH CENTRAL												
Ohio:												
Cincinnati	1	0	6	5	------	1	15	0	5	0	0	7
Cleveland	3	0	11	2	4	5	18	0	12	0	0	19
Columbus	1	0	3	3	------	0	8	0	15	0	0	------
Indiana:												
Fort Wayne	0	0	------	0	------	0	8	0	0	0	0	------
Indianapolis	1	0	------	0	20	0	12	0	5	0	0	6
South Bend	0	0	------	0	------	0	0	0	1	0	0	------
Terre Haute	0	0	------	0	------	0	2	0	1	0	0	------
Illinois:												
Chicago	0	0	11	6	322	10	62	0	37	0	1	22
Springfield	0	0	------	0	------	0	3	0	2	0	0	------
Michigan:												
Detroit	3	0	18	5	129	2	27	0	14	0	0	38
Flint	0	0	------	0	32	0	6	0	8	0	0	------
Grand Rapids	1	1	8	3	4	0	3	0	5	0	0	7
Wisconsin:												
Kenosha	0	0	------	0	------	0	0	0	0	0	0	------
Milwaukee	0	0	4	4	9	0	14	1	24	0	0	10
Racine	0	0	------	0	------	0	0	0	3	0	0	7
Superior	0	0	------	1	------	0	2	0	0	0	0	2
WEST NORTH CENTRAL												
Minnesota:												
Duluth	0	0	------	0	------	0	2	0	0	0	0	2
Minneapolis	1	0	------	0	------	0	3	0	4	0	0	1
Missouri:												
Kansas City	2	0	7	3	59	1	14	0	6	0	0	1
St. Joseph	0	0	------	0	37	0	0	0	4	0	0	------
St. Louis	0	0	12	6	13	2	21	0	3	0	0	2

City reports for week ended January 5, 1946—Continued

	Diphtheria cases	Encephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Poliomyelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
WEST NORTH CENTRAL—continued												
Nebraska:												
Omaha		0	------	1	-------	0	6	0	5	0	0	------
Kansas:												
Topeka	0	0	------	0	8	0	0	0	4	0	0	2
Wichita	0	0	------	0	-------	0	12	0	9	0	0	2
SOUTH ATLANTIC												
Delaware:												
Wilmington	0	0	------	0	2	1	4	0	0	0	0	------
Maryland:												
Baltimore	8	0	52	3	8	3	25	0	14	0	0	19
Cumberland	0	0	1	0	-------	0	0	0	0	0	0	------
Frederick	0	0	------	0	-------	0	2	0	0	0	0	------
District of Columbia:												
Washington	0	0	9	2	-------	2	8	0	3	0	2	10
Virginia:												
Lynchburg	2	0	46	0	-------	0	0	0	0	0	0	------
Richmond	0	0	3	3	1	0	3	0	7	0	1	2
Roanoke	0	0	------	0	-------	0	0	0	1	0	0	------
West Virginia:												
Charleston	0	0	------	0	-------	0	0	0	3	0	0	------
Wheeling	0	0	------	0	-------	1	2	0	1	0	0	1
North Carolina:												
Raleigh	0	0	------	0	-------	0	4	0	0	0	0	------
Winston-Salem	1	0	------	0	2	1	6	0	4	0	0	8
South Carolina:												
Charleston	0	0	183	3	-------	0	1	0	1	0	0	------
Georgia:												
Atlanta	0	0	85	0	-------	0	0	0	3	0	0	------
Brunswick	0	0	------	0	-------	0	0	0	0	0	0	------
Savannah	1	0	34	3	-------	0	2	0	2	0	0	------
Florida:												
Tampa	2	0	------	0	6	2	1	0	1	0	0	------
EAST SOUTH CENTRAL												
Tennessee:												
Memphis	0	0	7	5	4	0	22	0	6	0	0	4
Nashville	0	0	------	2	7	0	6	0	4	0	0	1
Alabama:												
Birmingham	3	0	117	0	7	1	11	0	5	0	0	1
Mobile	1	0	15	4	-------	1	1	0	0	0	0	------
WEST SOUTH CENTRAL												
Arkansas:												
Little Rock	0	0	93	1	1	0	1	0	1	0	0	1
Louisiana:												
New Orleans	8	0	15	3	-------	0	[1] 18	[1] 1	6	0	0	1
Shreveport	0	0	------	4	-------	0	0	0	0	0	1	------
Texas:												
Dallas	3	0	4	0	-------	1	3	0	4	0	0	1
Galveston	0	0	------	1	-------	0	1	0	1	0	0	------
Houston	1	0	------	1	2	1	7	1	5	0	1	------
San Antonio	2	0	8	5	3	0	7	0	0	0	0	1
MOUNTAIN												
Montana:												
Great Falls	0	0	------	2	-------	0	0	0	0	0	0	------
Helena	0	0	------	0	-------	0	0	0	0	0	0	------
Missoula	0	0	50	0	-------	0	1	1	2	0	0	------
Idaho:												
Boise	0	0	------	0	3	0	0	0	0	0	0	------
Colorado:												
Denver	1	0	14	4	7	4	12	0	6	0	0	8
Pueblo	0	0	------	0	1	0	0	0	7	0	0	9
Utah:												
Salt Lake City	0	0	------	0	4	0	1	0	8	0	0	------

[1] Corrected report, week ended Dec. 1, 1945: New Orleans pneumonia deaths 2 instead of 0; poliomyelitis cases 6 instead of 8.

City reports for week ended January 5, 1946—Continued

	Diphtheria cases	Encephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Poliomyelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
PACIFIC												
Washington:												
Seattle	0	0	------	1	61	0	3	0	7	0	0	5
Spokane	0	0	------	0	17	0	3	0	5	0	0	2
Tacoma	0	0	------	1	53	0	1	0	0	0	0	22
California:												
Los Angeles	4	0	190	5	25	3	8	1	42	0	0	7
Sacramento	1	0	------	0	16	0	5	0	1	0	0	14
San Francisco	0	0	17	0	92	2	9	0	10	0	0	6
Total	68	1	1,171	120	1,509	56	718	9	538	0	9	483
Corresponding week, 1945	75	------	125	44	219	------	488	------	1,112	0	4	463
Average, 1941–45	70	------	2,680	[2] 132	[3] 1,996	------	[2] 687	------	1,052	2	13	813

[2] 3-year average, 1943–45.
[3] 5-year median, 1941–45.

Anthrax.—Cases: Camden 1.
Dysentery, amebic.—Cases: New York 2; Detroit 3.
Dysentery, bacillary.—Cases: New York 2; Detroit 8; San Antonio 5; Los Angeles 2.
Dysentery, unspecified.—Cases: Baltimore 3; San Antonio 15.
Tularemia.—Cases: Nashville 1.
Typhus fever, endemic.—Cases: New York 1; Atlanta 3; Tampa 1; Birmingham 2; New Orleans 2; Shreveport 2.

Rates (annual basis) per 100,000 population, by geographic groups, for the 85 cities in the preceding table (estimated population, 1943, 33,842,300)

	Diphtheria case rates	Encephalitis, infectious, case rates	Influenza		Measles case rates	Meningitis, meningococcus, case rates	Pneumonia death rates	Poliomyelitis case rates	Scarlet fever case rates	Smallpox case rates	Typhoid and paratyphoid fever case rates	Whooping cough case rates
			Case rates	Death rates								
New England	2.9	0.0	31.5	5.7	103	2.9	131.7	0.0	163	0.0	2.9	180
Middle Atlantic	7.4	0.0	63.4	12.0	238	5.1	118.5	1.9	71	0.0	0.9	78
East North Central	6.1	0.6	37.1	17.6	316	10.9	109.5	0.6	80	0.0	0.6	72
West North Central	6.8	0.0	42.8	22.5	264	6.8	130.7	0.0	79	0.0	0.0	23
South Atlantic	23.2	0.0	685.5	23.2	32	16.6	96.3	0.0	66	0.0	5.0	66
East South Central	23.6	0.0	820.4	64.9	106	11.8	236.1	0.0	89	0.0	0.0	35
West South Central	40.2	0.0	344.3	43.0	17	5.7	106.2	5.7	49	0.0	5.7	11
Mountain	8.2	0.0	525.3	49.2	123	32.8	114.9	8.2	189	0.0	0.0	140
Pacific	7.9	0.0	327.4	11.1	418	7.9	45.9	1.6	103	0.0	0.0	89
Total	10.5	0.2	180.9	18.5	233	8.7	110.9	1.4	83	0.0	1.4	75

TERRITORIES AND POSSESSIONS

Panama Canal Zone

Notifiable diseases—November 1945.—During the month of November 1945, certain notifiable diseases were reported in the Panama Canal Zone and terminal cities as follows:

Disease	Panama		Colon		Canal Zone		Outside the Zone and terminal cities		Total	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
Chickenpox	3				2				5	
Diphtheria	7		1				1		9	
Dysentery, amebic	1				1		4		6	
Malaria [1]	7		2		54		80	2	143	2
Measles					1		2		3	
Paratyphoid fever	1								1	
Pneumonia		5		1	51	1		4	[2] 51	11
Tuberculosis		20		5	3			4	[2] 3	29
Whooping cough					3				[2] 3	

[1] 19 recurrent cases.
[2] Reported in the Canal Zone only.

FOREIGN REPORTS

CANADA

Provinces—Communicable diseases—Week ended December 15, 1945.—During the week ended December 15, 1945, cases of certain communicable diseases were reported by the Dominion Bureau of Statistics of Canada as follows:

Disease	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Total
Chickenpox		9		267	264	41	87	65	131	864
Diphtheria		6	4	40		4	2	3	6	65
Dysentery, bacillary				1						1
German measles				4	13		2	2	6	27
Influenza		10			29				2	41
Measles			4	334	400	2	8	28	74	850
Meningitis, meningococcus								1	1	2
Mumps				69	81	22	20	82	34	308
Poliomyelitis		1								1
Scarlet fever		13	14	78	61	21	8	28	25	248
Tuberculosis (all forms)		10	20	138	44	11		36		259
Typhoid and paratyphoid fever				18	1				2	21
Undulant fever					3					3
Venereal diseases:										
Gonorrhea	2	11	11	91	180	71	29	45		440
Syphilis	1	9	4	114	160	21	14	16		339
Whooping cough		1		159	21	5		9	2	197

JAMAICA

Notifiable diseases—4 weeks ended December 15, 1945.—During the 4 weeks ended December 15, 1945, cases of certain notifiable diseases were reported in Kingston, Jamaica, and in the island outside of Kingston, as follows:

Disease	Kingston	Other localities	Disease	Kingston	Other localities
Chickenpox	3	2	Puerperal fever		1
Diphtheria	6	6	Scarlet fever	2	2
Dysentery, unspecified	7	12	Tuberculosis, pulmonary	22	61
Erysipelas	1	5	Typhoid fever	18	142
Leprosy		3	Typhus fever	4	

NORWAY

Notifiable diseases—September 1945.—During the month of September 1945, cases of certain notifiable diseases were reported in Norway as follows:

Disease	Cases	Disease	Cases
Cerebrospinal meningitis	10	Mumps	52
Diphtheria	911	Paratyphoid fever	7
Dysentery, unspecified	35	Pneumonia (all forms)	1,015
Encephalitis, epidemic	2	Poliomyelitis	162
Erysipelas	535	Rheumatism	147
Gastroenteritis	6,909	Scabies	6,575
Gonorrhea	629	Scarlet fever	404
Hepatitis, epidemic	1,157	Syphilis	92
Impetigo contagiosa	5,807	Tuberculosis (all forms)	258
Influenza	1,621	Typhoid fever	2
Laryngitis	7,754	Weil's disease	10
Lymphogranuloma inguinale	1	Whooping cough	2,915
Measles	3,907		

REPORTS OF CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER RECEIVED DURING THE CURRENT WEEK

NOTE.—Except in cases of unusual incidence, only those places are included which had not previously reported any of the above-named diseases, except yellow fever, during recent months. All reports of yellow fever are published currently.

A table showing the accumulated figures for these diseases for the year to date is published in the PUBLIC HEALTH REPORTS for the last Friday of each month.

Plague

Peru.—For the month of November 1945, plague was reported in Peru as follows: Huamani Farm, Ica Department, 1 case; Chicaca Farm, Huacho, Lima Department, 1 case, 1 death; Siclamache Farm, Huancabamba Province, Piura Department, 1 case; Tumbes city, 19 cases, 3 deaths.

Smallpox

Belgian Congo.—For the week ended December 15, 1945, 88 cases of smallpox (alastrim) were reported in Belgian Congo.

Morocco (French).—For the period December 21–31, 1945, 154 cases of smallpox were reported in French Morocco, including regions as follows: Agadir and frontier districts, 17; Casablanca, 42; Fez, 18; Marrakech, 40; Meknes, 9; Oujda, 15; Rabat, 13.

Typhus Fever

Belgian Congo.—For the week ended December 15, 1945, 83 cases of typhus fever were reported in Belgian Congo, including 7 cases in Leopoldville Province and 76 cases in Usumbura Province.

Egypt.—Typhus fever has been reported in Egypt as follows: Week ended December 8, 1945, 39 cases; week ended December 15, 1945, 53 cases.

Morocco (French).—For the period December 21–31, 1945, 161 cases of typhus fever were reported in French Morocco including regions as follows: Agadir and frontier districts, 2; Casablanca, 66; Fez, 9; Marrakech, 6; Meknes, 54; Rabat, 4.

Rumania.—A report dated January 8, 1946, stated that about 250 cases of typhus fever have been occurring weekly throughout Rumania.

Turkey.—For the week ended January 5, 1946, 44 cases of typhus fever were reported in Turkey, including the ports of Antalya, 1; Balikesir, 5; Istanbul, 11; Izmir, 6; Kocaeli, 3; Zonguldak, 1.

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FEDERAL SECURITY AGENCY

UNITED STATES PUBLIC HEALTH SERVICE

THOMAS PARRAN, *Surgeon General*

DIVISION OF PUBLIC HEALTH METHODS

G. ST. J. PERROTT, *Chief of Division*

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